REMARKS

Claims 1, 4, 5, 7-11, 14, and 15 will be pending upon entry of the amendment. Claim 15 is newly added. Claims 9-11 and 14 are withdrawn as directed to non-elected subject matter, and claims 2, 3, 6, 12, and 13 were previously canceled.

Claim Amendment

Claim 15 adds the requirement that the impregnation composition be at ambient temperature. Support is found throughout the specification, particularly in Example 1. At page 4, lines 3-4, the specification discloses that the impregnation composition can be applied by painting or spraying, which are operations normally carried out at ambient temperature. Example 1, steps c) and d), describe how the composition is painted or sprayed on, after which the temperature is raised slowly up to 350°C. It is apparent that the application of the composition was at ambient temperature, as no heating is referenced for the application step, whereas a detailed heating protocol is provided in drying step d). Furthermore, in the attached Declaration at Paragraph 9, Dr. Pascal Diss testifies that the person of ordinary skill would have understood from the disclosure that the impregnation composition was applied under ambient conditions. Thus, no new matter has been added.

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Information Disclosure Statement

Attached to this Response, please find a Supplemental Information Disclosure Statement to submit an additional reference that came to light during the prosecution of a related application.

Status of the Case and Rule 132 Declaration

Applicants have filed a Notice of Appeal and Pre-Appeal Brief Request for Review. However, Applicants now present a Rule 132 Declaration from Dr. Pascal Diss regarding differences between the de Nora reference and the claimed invention. The Declaration is referenced in the arguments presented below. Reconsideration and withdrawal of the rejections is requested in view of the Declaration and arguments.

Rejection Under 35 U.S.C. 102(b)

Claims 1 and 3-5 are rejected as allegedly anticipated by De Nora et al. (U.S. 6,228,424). The rejection is respectfully traversed.

De Nora discloses using an impregnation solution that is saturated with a treating agent but heated to just above its solubility point so as to remain in a liquid state prior to use for impregnation. When the solution contacts the porous body to

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be protected, which is at a lower temperature than the solution, the cooling of the impregnation composition by the body causes the treating agent to precipitate within surface pores of the body (see De Nora Abstract and at col. 2, lines 32-38 and 49-52).

The present invention uses an impregnation solution which is applied at ambient temperature, without heating, and does not rely on precipitation of a treating agent. See Declaration of Dr. Diss at Paragraphs 9, 10, and 12. Instead, the method of the present invention introduces titanium diboride particles of defined small size together with a metal phosphate compound deep into pores of a body, where they can react under use conditions to form B_2O_3, TiO_2 and Ti-P-O-Me protective oxidation complexes. See Par. 10 of Declaration. Thus, the present invention uses an entirely different mechanism to provide protection against oxidation of carbon composite materials compared to de Nora.

The Examiner's suggestion that de Nora teaches the combined use of titanium diboride and a metal phosphate in an impregnation composition overlooks the known chemical properties of these agents. de Nora's method fundamentally requires heating the solution so as to render the treating agents soluble. de Nora's method is based on the principle that barely soluble chemical agents in a heated solution will precipitate in the surface pores of a cooler treated body. However, if a solution containing both

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titanium diboride and a metal phosphate is heated, it will form a highly insoluble product that would prevent de Nora's method from working at all. This is generally known in the field of chemistry, and is confirmed by the testimony of Dr. Diss in Paragraphs 10-11 of his Declaration. Therefore, there can be no doubt that de Nora does not intend this combination to be used in an impregnation composition as it would be completely inconsistent with the working mechanism of de Nora's method.

While the presently claimed method requires an impregnation composition that contains both insoluble titanium diboride and a metal phosphate compound, De Nora lacks any teaching or even suggestion of an impregnation composition containing both a metal phosphate compound and titanium diboride. Dr. Diss confirms this at Paragraphs 4-7, where he explains that de Nora's use of metal phosphate and a boron compound was limited to soluble boron compounds different from titanium diboride, which is insoluble in aqueous media.

For the foregoing reasons, De Nora does not teach every limitation of the present claims and does not anticipate the claims. The withdrawal of this rejection is respectfully requested.

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Rejections Under 35 U.S.C. 103(a)

Claim 6 is rejected as allegedly obvious over De Nora et al. (U.S. 6,228,424). De Nora is alleged to teach all elements of the claim except the weight percentages.

Even if the weight percentages could have been determined by routine optimization, there are differences between De Nora's method and the claimed method, as discussed for the previous rejection. In particular, De Nora does net teach the simultaneous application of aluminum phosphate and TiB_2. Therefore, De Nora does not teach every limitation of the present claims and does not render the claims obvious.

Claims 2, 7, 8, 12, and 13 are rejected as allegedly obvious over de Nora (U.S. 6,228,424) in view of Morel (U.S. 5,420,084). As a threshold matter, it is noted that claims 2, 12, and 13 have been cancelled. Since de Nora does not teach the size range of 0.1 to 200 μm for TiB_2 particles, Morel is added for its teaching of 10-40 μm ZrB_2 particles.

The deficiencies of de Nora have been discussed above. In particular, de Nora fails to teach or suggest using aluminum phosphate and TiB_2 in the same solution, and for that reason the rejection fails.

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Further, as argued previously, Morel teaches that TiB_2 is inappropriate to form a protective coating that remains efficient over 1000°C (Morel at col. 2, lines 55-59). Morel teaches to use a mixture of ZrB_2, not TiB_2, and colloidal silica (col. 4, lines 6-9). The skilled person considering both de Nora and Morel, in order to increase the temperature at which the protective coating would be efficient, would have been motivated to use ZrB_2 and not TiB_2.

Therefore, for the reasons discussed above, the present claims are not obvious and the rejections should be withdrawn.

The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

Pascal Diss et al.

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